

Polio Eradication

Setting the 'context'



Definitions (1)

Poliomyelitis Eradication

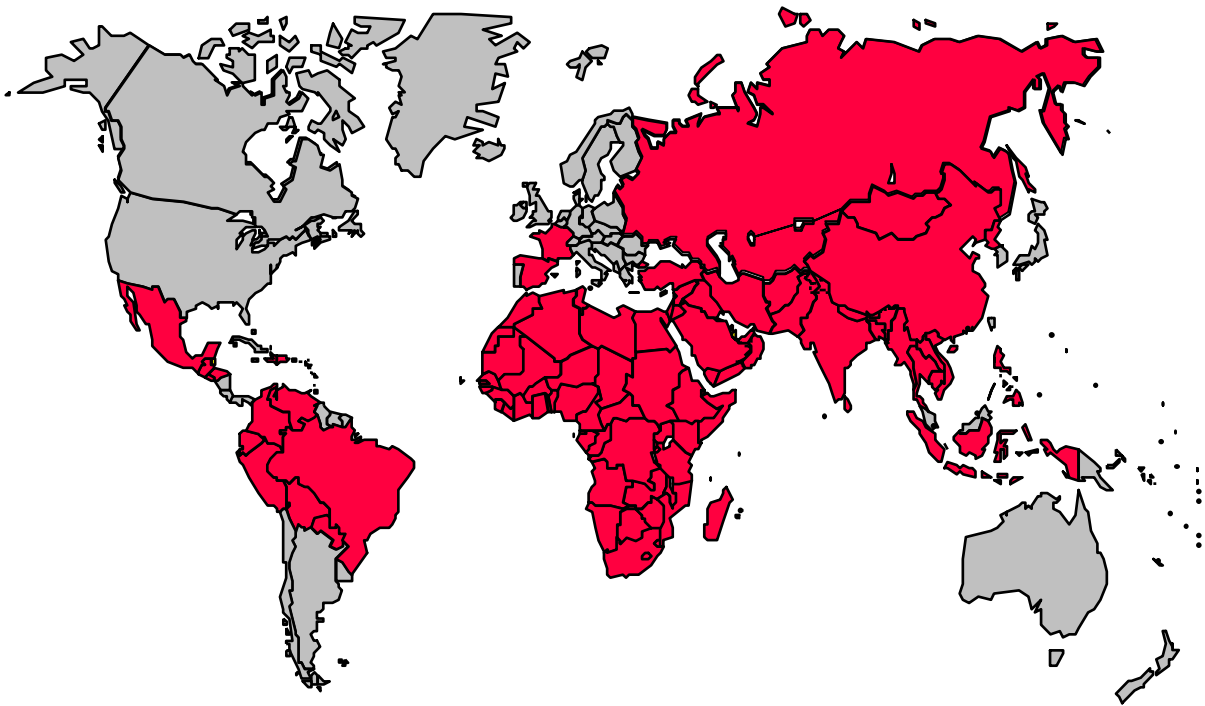
'elimination of the indigenous transmission of wild poliomyelitis viruses'.

**World Health Assembly
Resolution 41.28 (1988)**

Wild Poliovirus, 1988

Infected countries: > 125 (est'd)

Paralysed children: > 350,000 (est'd)



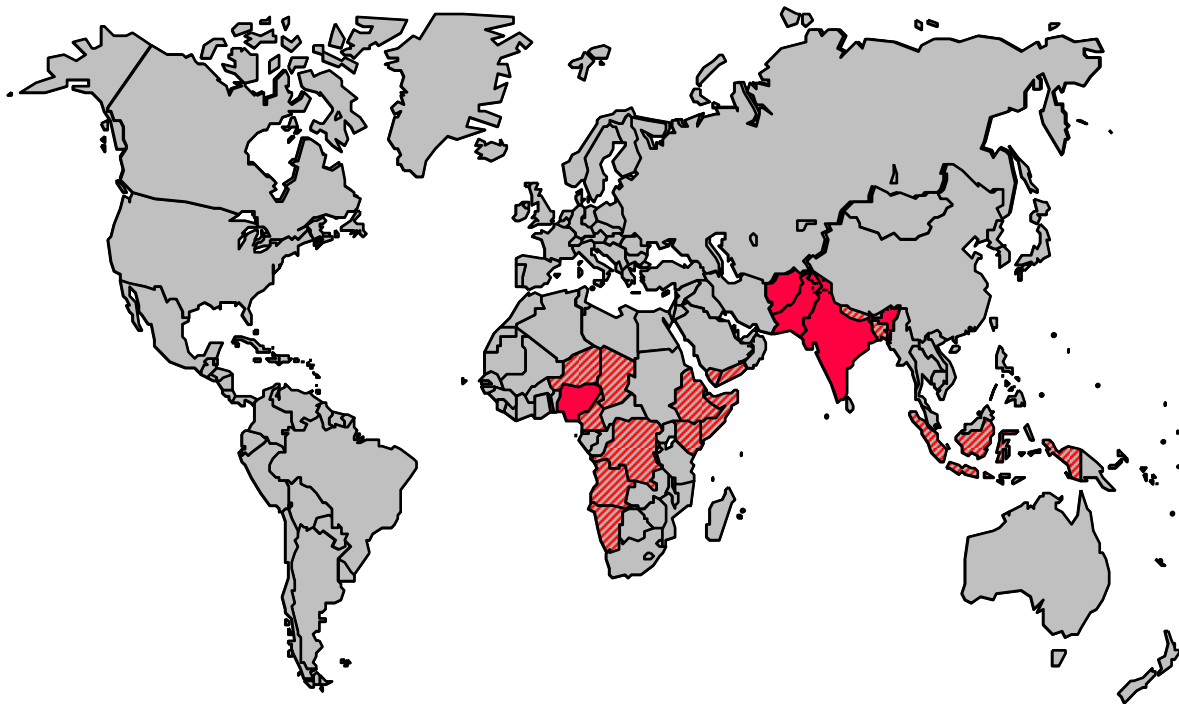
Eradication Strategies

- Routine immunization
- National Immunization Days (NIDs)
- Acute Flaccid Paralysis (AFP) surveillance
- 'Mop-up' campaigns

Wild Poliovirus, 2006

Endemic countries: 97% reduction

Paralysed children: 99% reduction



Polio-infected Countries

 Endemic (4)

 Reinfected (13)

Definitions (2)

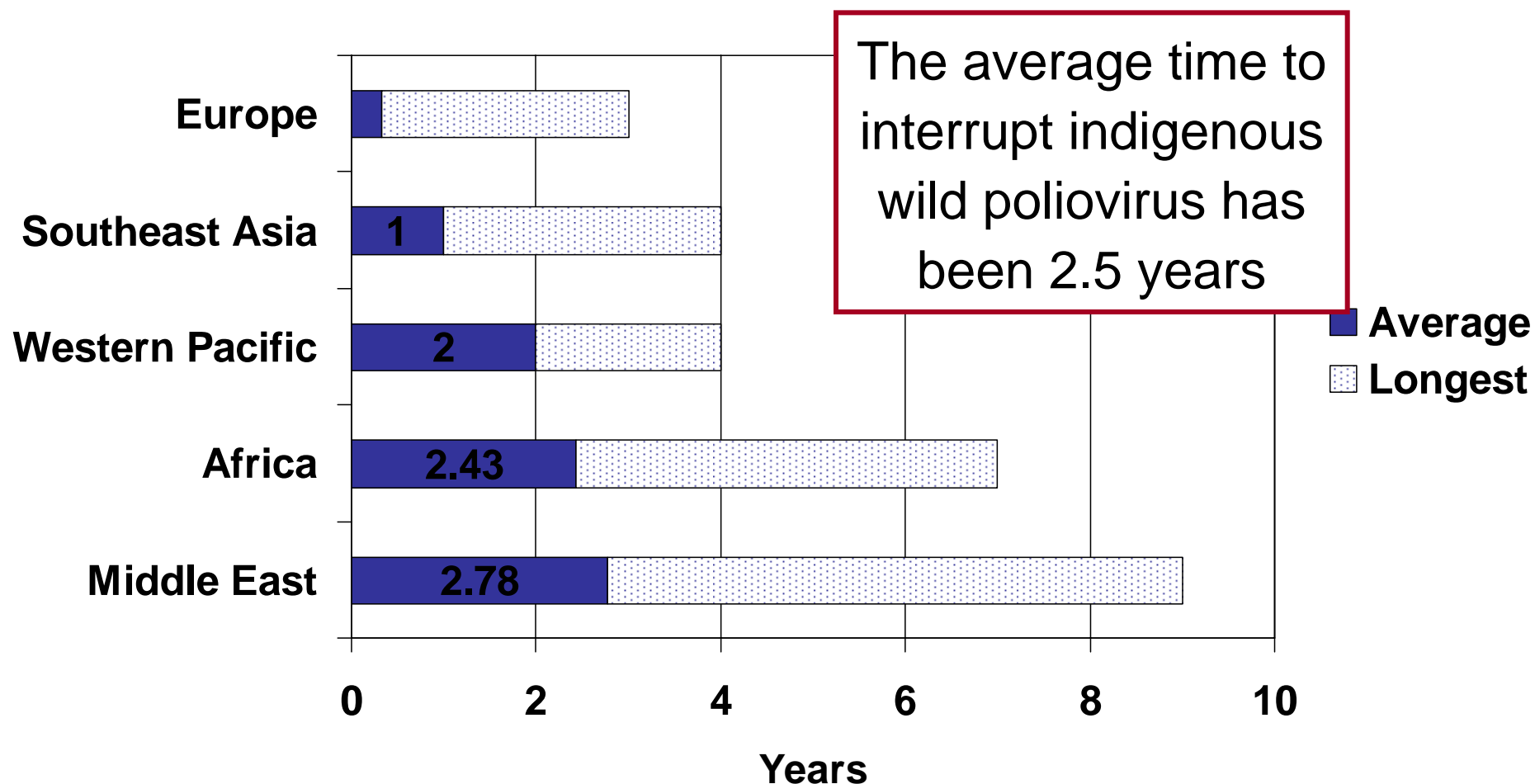
Endemic area: ongoing transmission of indigenous wild poliovirus.

Re-infected: ≥ 2 cases in the same transmission chain (genetic) due to an imported wild poliovirus.

Sporadic importation: a single polio case due to an imported wild poliovirus.

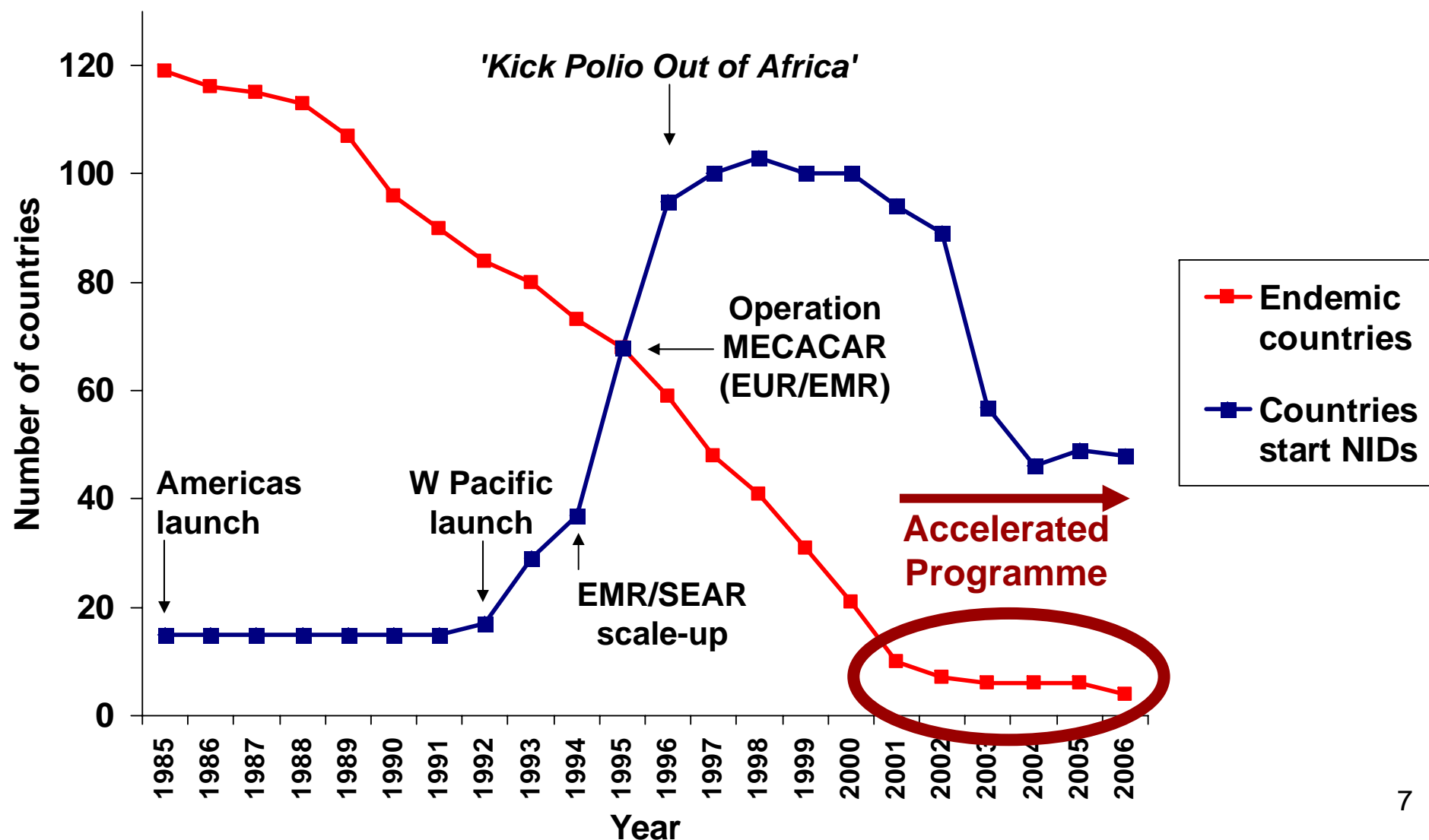
Impact of Eradication Strategies

Time from 1st NID to last indigenous virus*



* excluding the Americas & currently 'endemic' countries (Afghanistan, India, Nigeria, Pakistan)

'Endemic' Countries & National Immunization Days (NIDs), 1985-2006

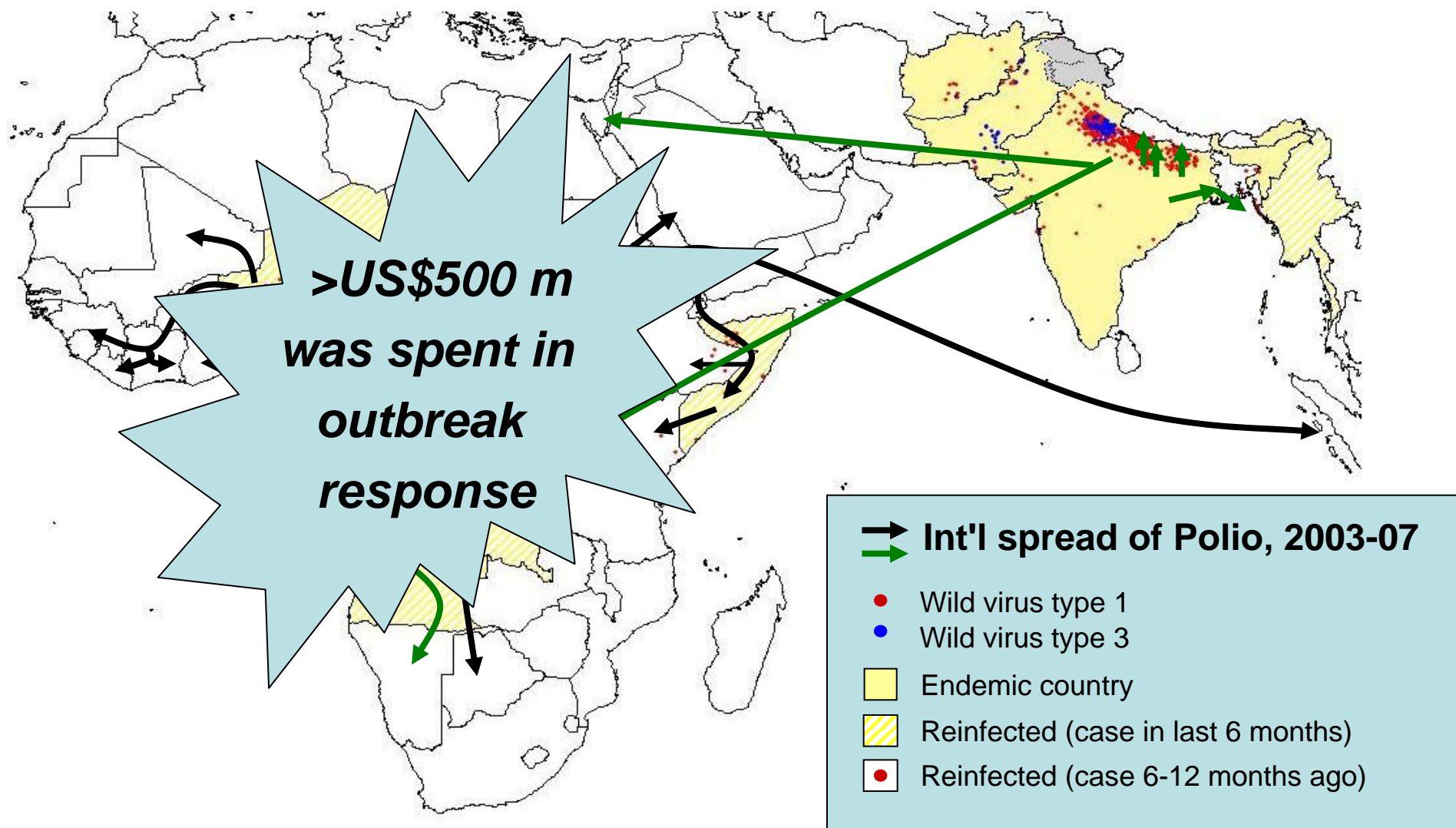


Per dose protective efficacy of tOPV against type 1 poliovirus, India 1997-2005

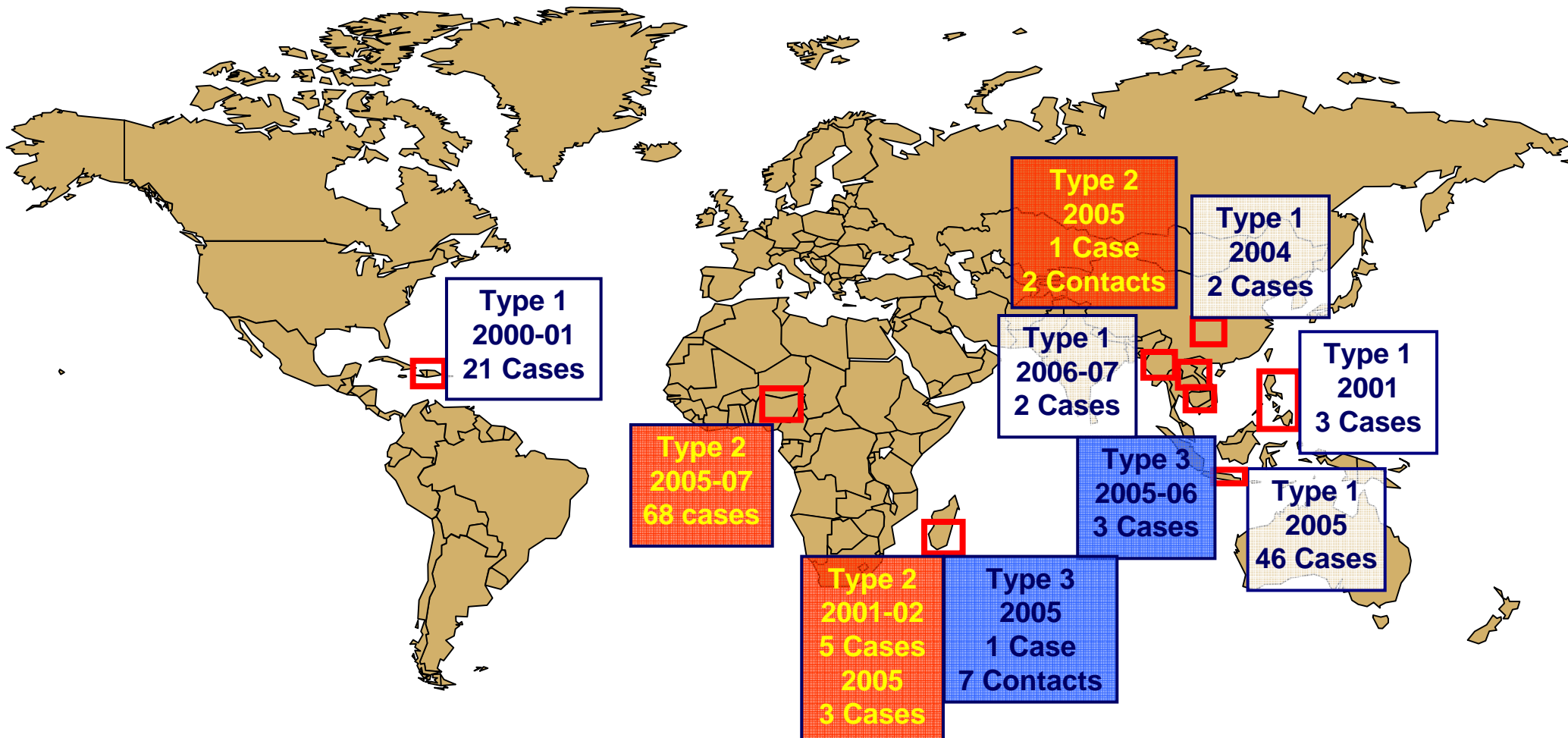
Location	Vaccine efficacy (%) (95% CI)
Rest of India	21 (15 - 27)
Bihar	18 (9 - 26)
Uttar Pradesh	9 (6 - 13)*

* significantly different than rest of India, $p < 0.01$

International spread of polioviruses 2003-2006



circulating Vaccine-Derived Poliovirus Outbreaks (cVDPVs), 2000-2007*



* data as of 17 September 2007

A flawed eradication strategy?

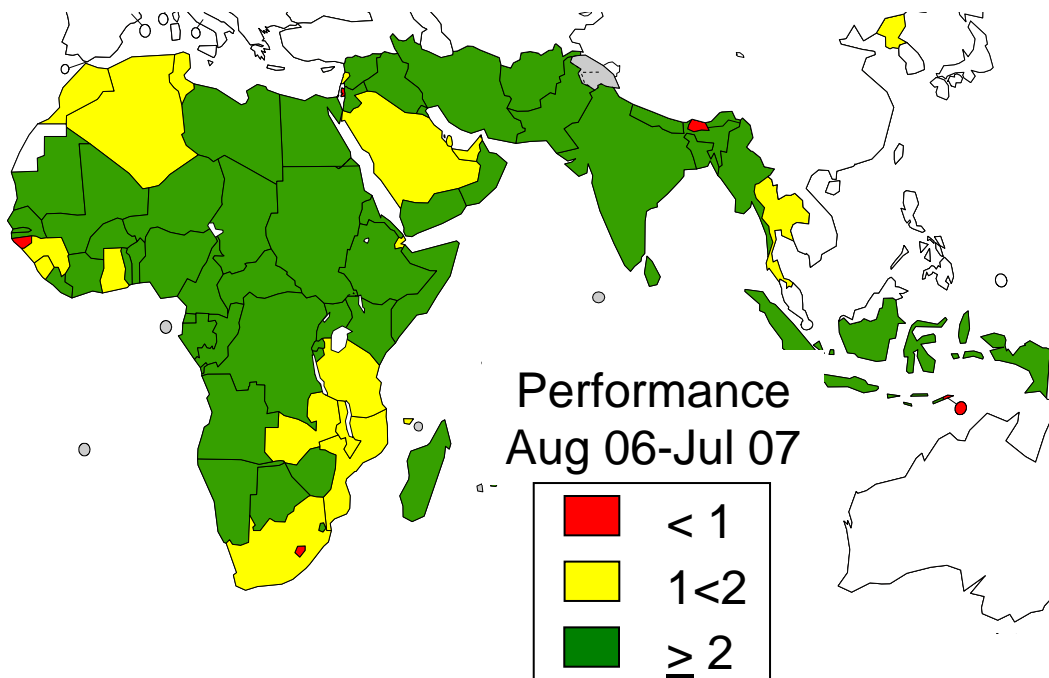
- persistent transmission of indigenous virus
- international spread of poliovirus
- circulating vaccine-derived polioviruses (cVDPVs)
- delays in poliovirus detection (12-36 months)

All of these challenges reflect sub-optimal application of 1 or more strategy

***Enhancing the
eradication strategies
2000-2006***

Modified surveillance & lab strategies (1)

**AFP detection target doubled
(to >2 cases/100 000)**



**New lab procedures cut by
50% time to confirm polio**



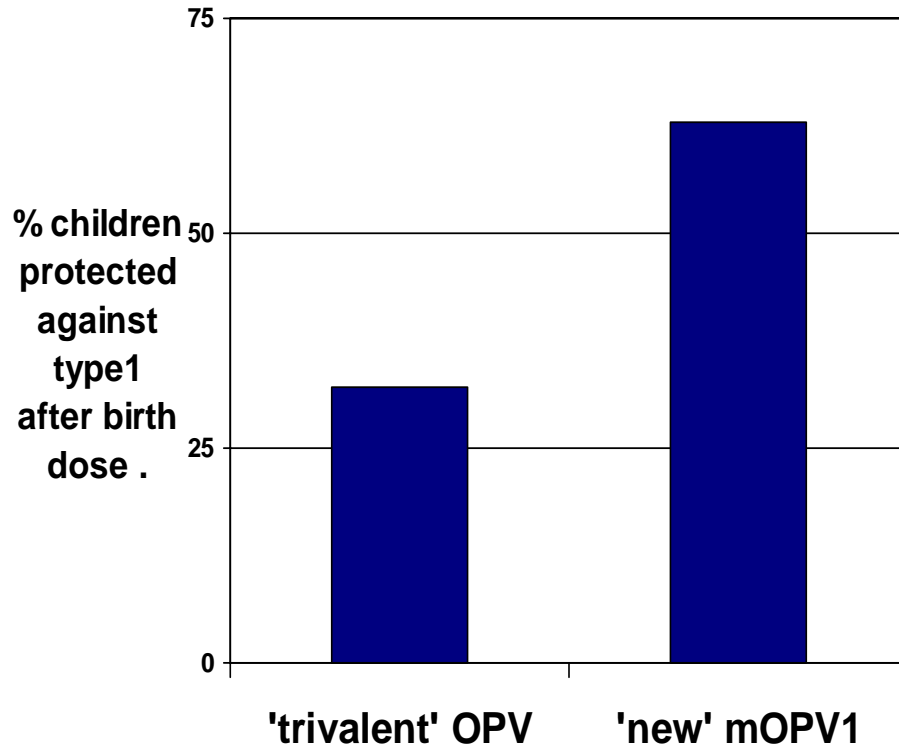
Modified surveillance & lab strategies (2)

Ongoing adaptation of lab techniques to systematically screen all Sabin-derived viruses for genetic drift

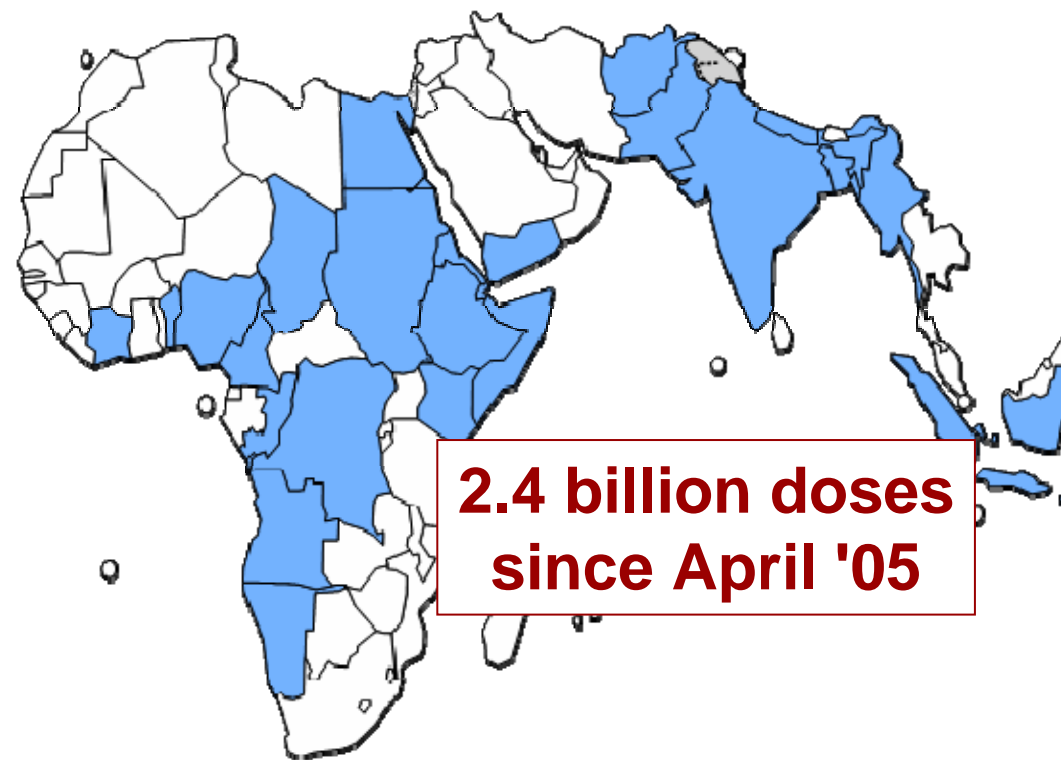
	AFP cases w. PVs	AFP w. Sabin-like viruses	cVDPV *	iVDPV	aVPDV
1999-2001	3423	3257	25	3	4
2002	6294	2948	4	0	4
2003	3167	2451	0	2	1
2004	3689	2373	2	0	3
2005	5393	4422	52	4	3
2006	5301	3685	22	3	1
Total	27,267	19,136	105 (0.55%)	12 (0.06%)	16 (0.08%)

Development & rapid scale-up of monovalent OPV use

mOPV1 clinical trial
Egypt, 2006



Countries using mOPV1
2006-2007 ($N = 24$)



New tactics to address specific challenge of each 'endemic' area



Nigeria: 'IPDs' or Immunization Plus Days since Mar 2006

Pakistan/Afghanistan: synchronized campaigns since Nov 2006



India: accelerated mOPV schedule since January 2007

New tactics to reduce the risks of to importation

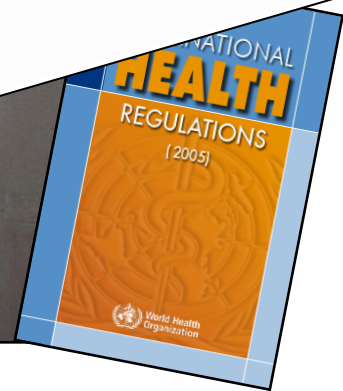
THE TIMES OF INDIA



LUCKNOW: Saudi Arabia's king Abdullah Bin Abdul Aziz Al Saud might succeed where Bollywood icon Amitabh Bachchan has failed. A communication to the ministry of external affairs from Saudi monarch's Haj minister Al Farsi seeks assurance that all pilgrims from India are inoculated against polio before boarding their flights for Mecca.

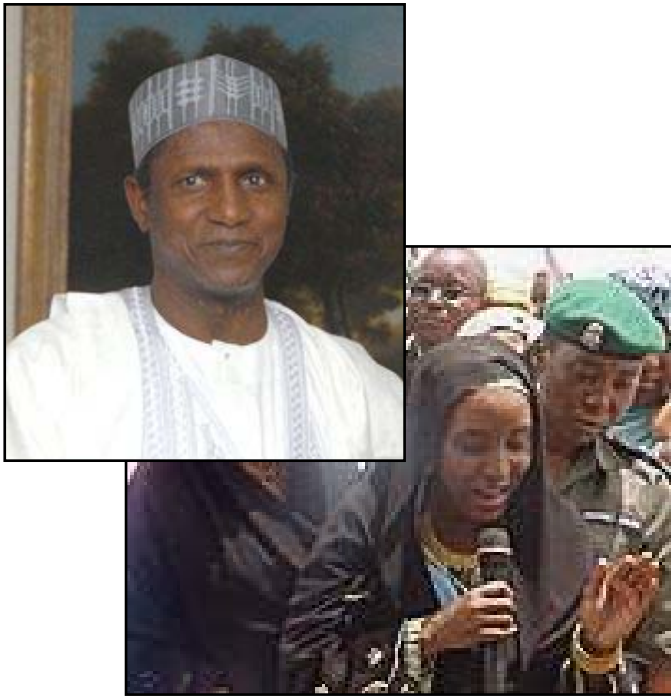
entry visas.

New Int'l Recommendations on
Polio Immunization & Travel



New efforts to engage political leadership

President Yar'Adua
& 1st Lady, **Nigeria**



Ministers of Health
India & Pakistan



President Karzai
Afghanistan



New efforts to engage affected communities (2006)



Muslim Leader Conclave
Northern India



Community Dialogues
Northern Nigeria

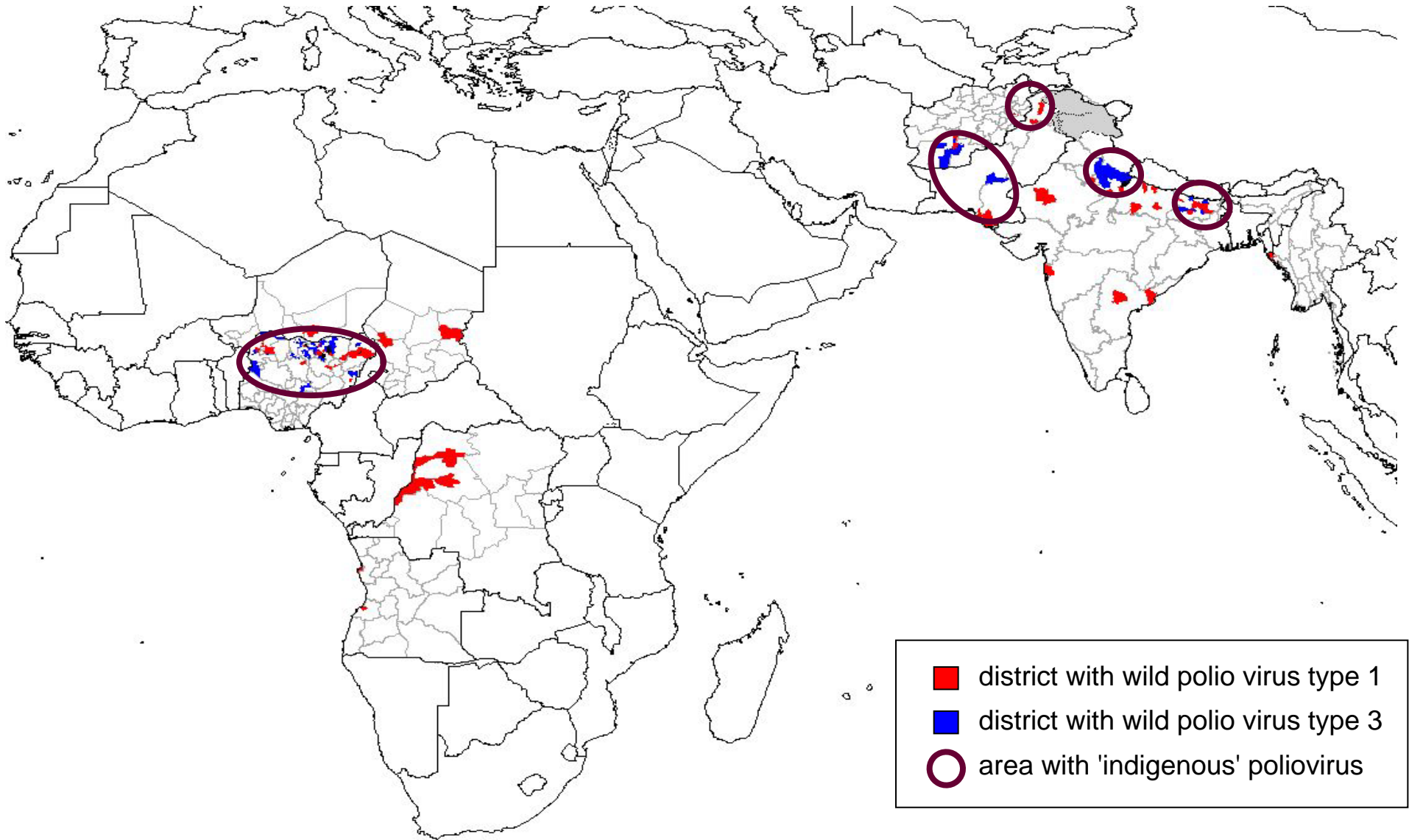
Impact of enhanced eradication strategies

Progress in enhancing OPV coverage in remaining 'endemic' zones, 2007*

	0-dose Children		Average Doses/Child	
	endemic areas	polio free areas	endemic areas	polio free areas
Afghanistan	7%	1%	11	10
Pakistan	1%	0%	12	11
Nigeria	19%	1%	3	4
India	0%	0%	12	9

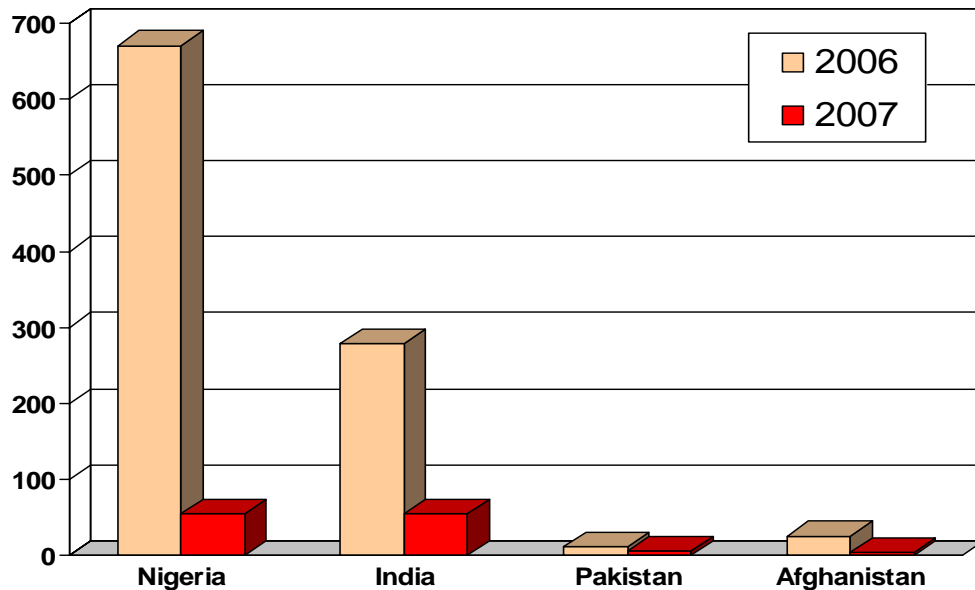
* as measured by reported OPV doses among NP AFP cases aged 6-35 months with paralysis between Jan-Jun 2007

Wild poliovirus in last 6 months

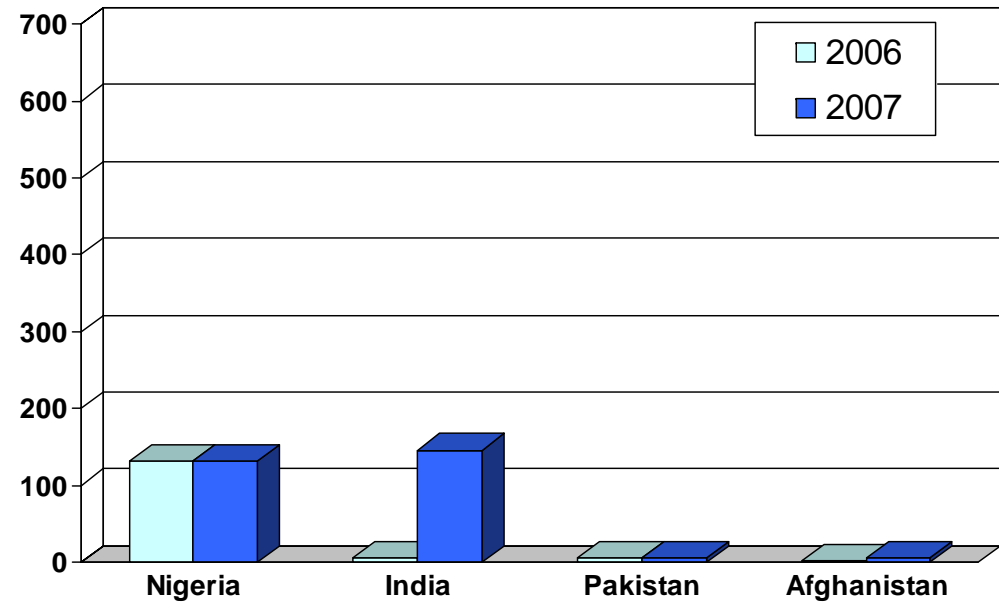


Year-to-date comparison of polio cases due to wild poliovirus, 2006-2007

Type 1

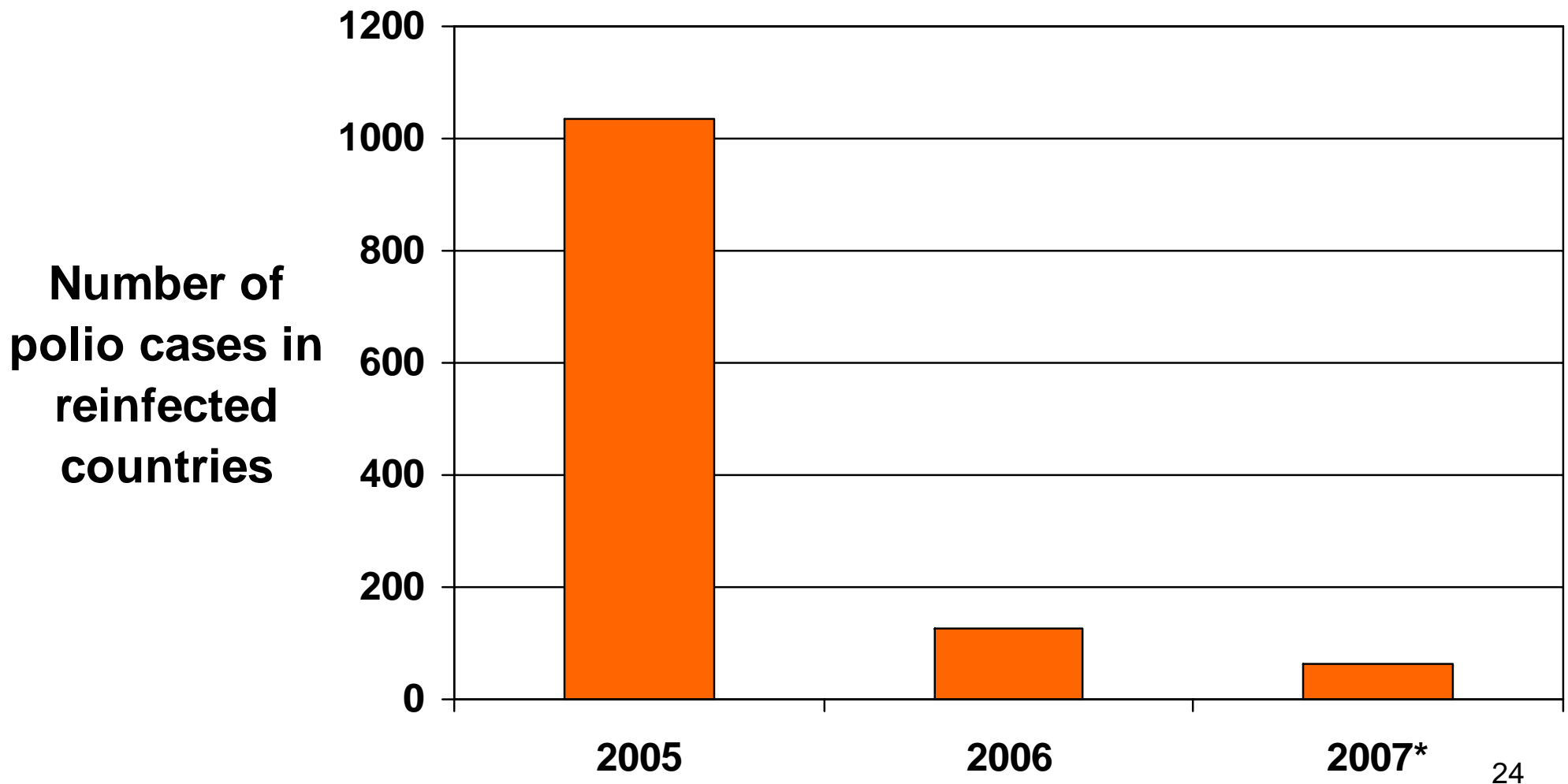


Type 3

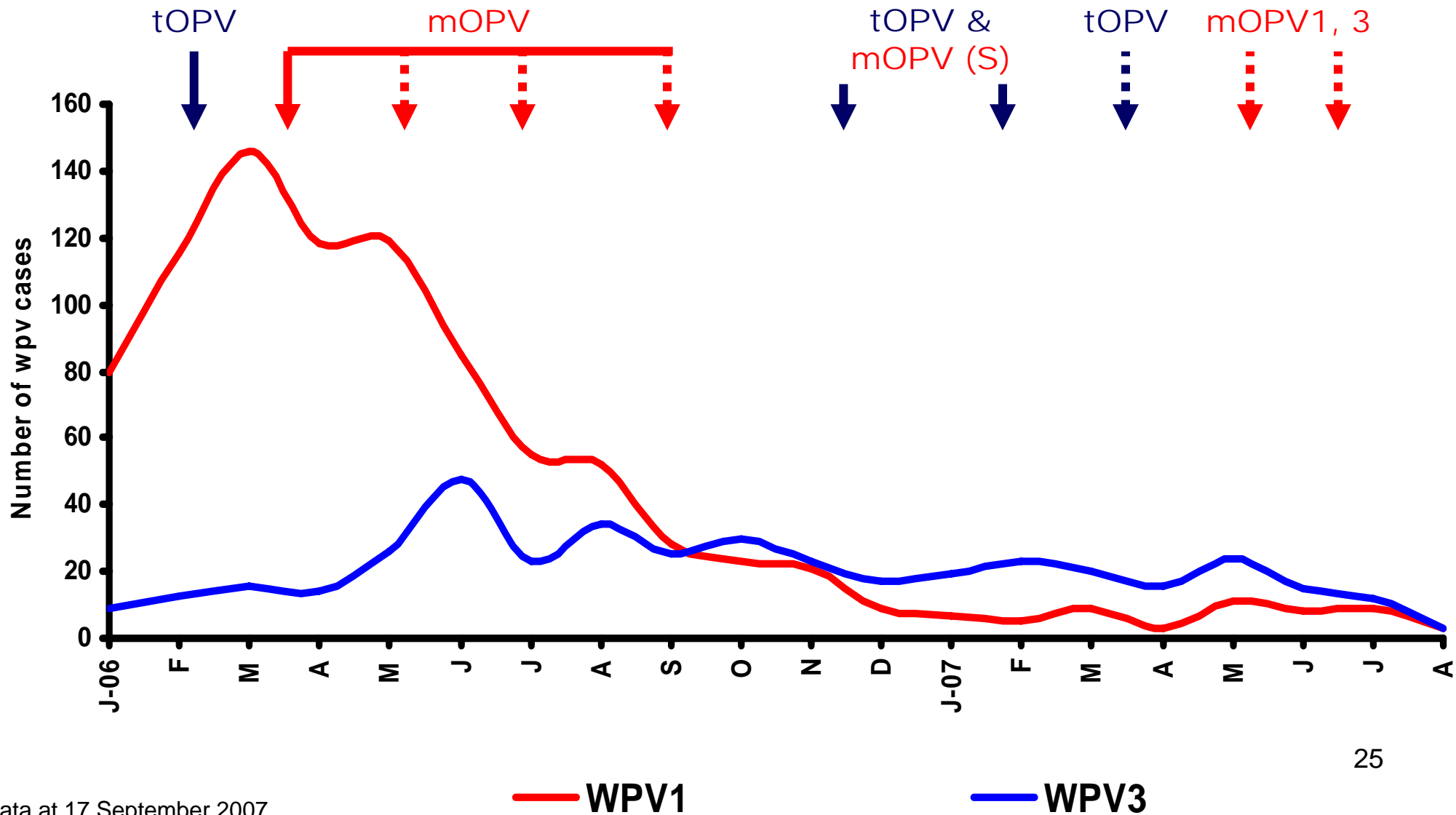


*data at 17 September 2007

Impact of new tactics on polio cases & outbreaks in reinfected areas

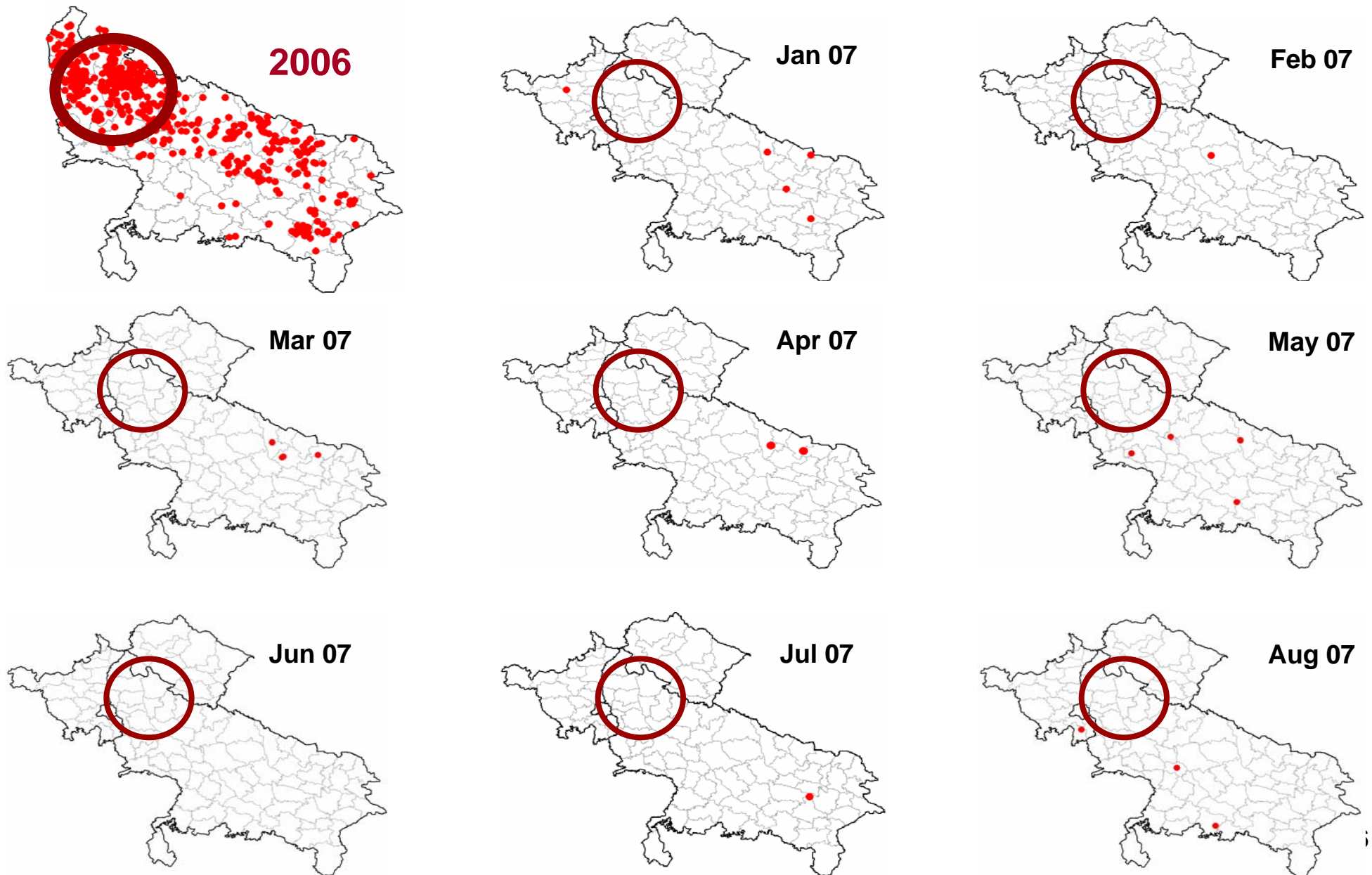


New Tools & Tactics: impact in Nigeria*



*data at 17 September 2007

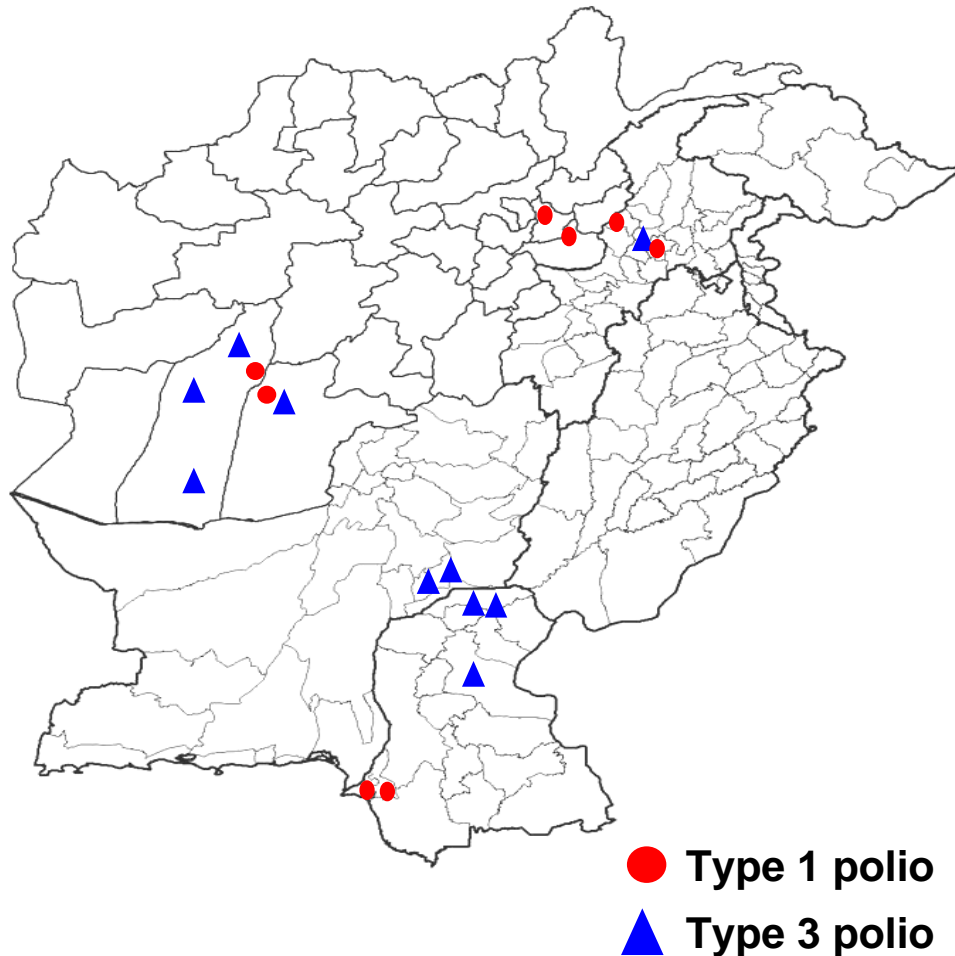
Impact on Type 1 Polio, UP, India



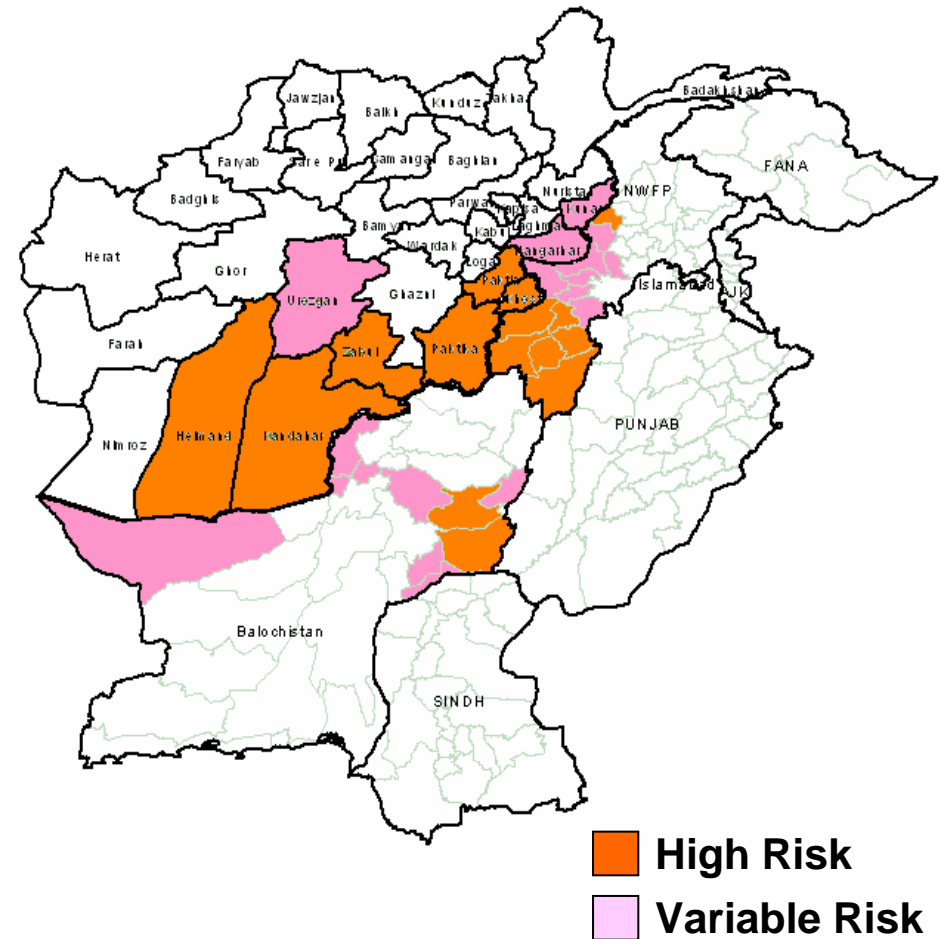
* data as on 8th September 2007

Impact: Afghanistan/Pakistan

Polio Cases, 2007



Security Risks



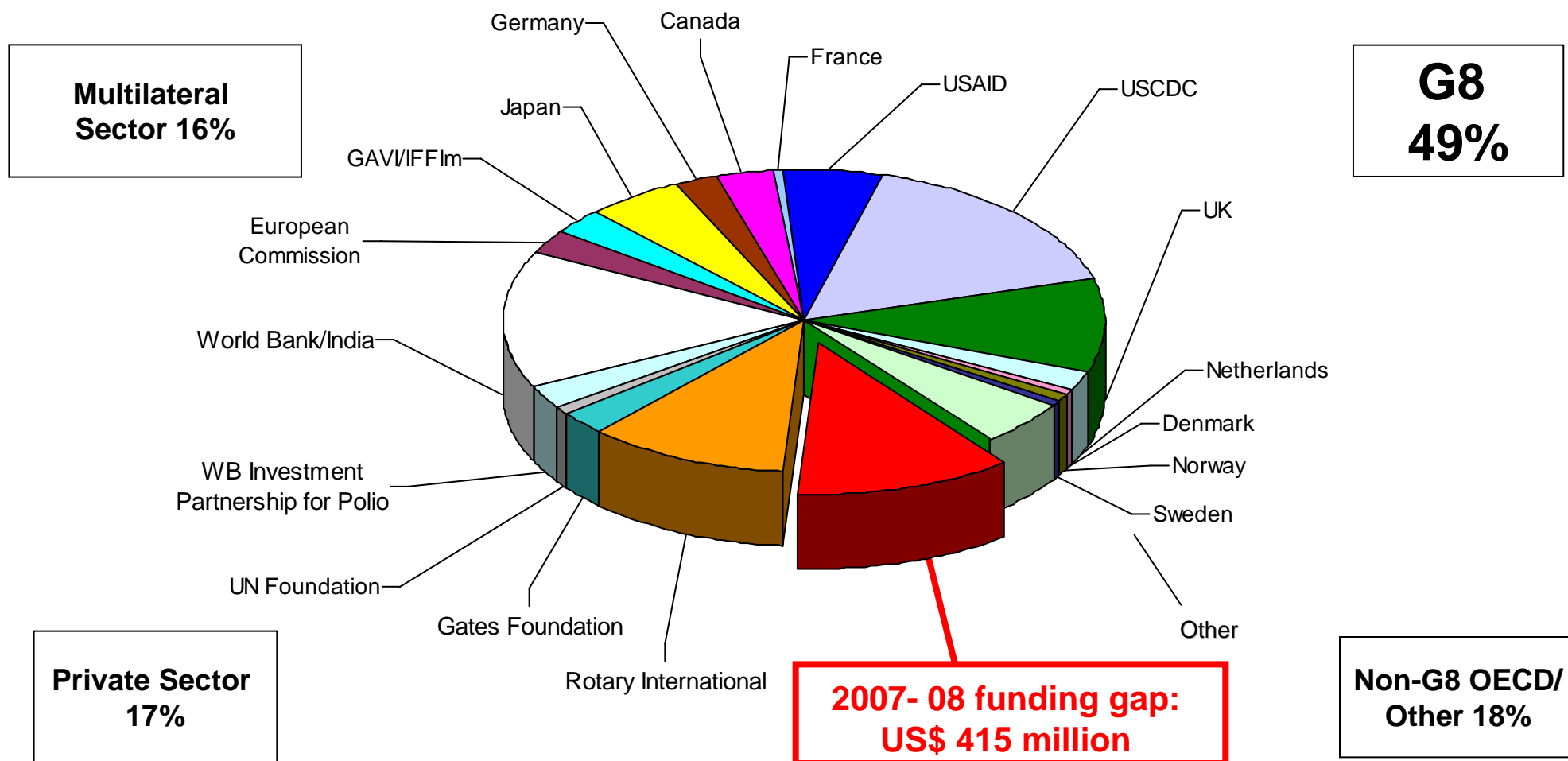
Priorities

Immediate priorities to interrupt all wild poliovirus transmission

- **India:** sustain commitments, despite type 3 outbreak, & accelerate research (incl. role of high titre mOPV1 and/or IPV).
- **Nigeria:** improve operations in northern districts to reduce 'missed' children to <10%.
- **Pakistan/Afghanistan:** further refine local tactics to enhance access & security of teams.
- **Reinfected areas:** fully implement int'l response guidelines in Angola, Chad, DR Congo.

Close the Financing Gap for 2007-8

US\$ 5.3 billion to date for 1988-2008



'Other': the Governments of Austria, Australia, Azerbaijan, Bangladesh, Belgium, Cyprus, Czech Republic, Finland, Hungary, Iceland, Indonesia, Ireland, Italy, Luxembourg, Malaysia, Monaco, Namibia, New Zealand, Nigeria, Oman, Pakistan, Portugal, Qatar, Republic of Korea, Russian Federation, Saudi Arabia, Singapore, Spain, Switzerland, Turkey, the United Arab Emirates; African Development Bank; AG Fund; American Red Cross; De Beers, Inter-American Development Bank, Central Emergency Response Fund (CERF), International Federation of Red Cross and Red Crescent Societies, Oil for Food Programme, OPEC Fund, Sanofi Pasteur; Saudi Arabian Red Crescent Society, Smith Kline Biologicals, UNICEF National Committees, UNICEF Regular and Other Resources, United Arab Emirates Red Crescent Society, WHO Regular Budget and Wyeth.

Ongoing programme of work to eliminate all polio disease

- assessment of emerging poliovirus risks
- longterm surveillance & response capacity
- appropriate containment for all poliovirus
- a 'safer', affordable IPV
- cessation, if possible, of routine OPV use.

After interruption of wild poliovirus transmission globally, the concerted programme of work to 'stop all polio disease' will need to continue.